

DFID Project on Data Collection and Sharing Mechanisms for Co-Management

Identification of System Requirements

Report in Preparation for the Guidelines Development Workshop

Level 4 – International Management Advisory Bodies

Fisheries Department,
Food and Agriculture Organization of the United Nations

1. Description of FAO

1.1. Roles and responsibilities

FAO is not a fisheries management or a fisheries management advisory body per se in the sense that it does not execute fisheries management, nor does it provide routine advice to fisheries management bodies. However, FAO does provide advice and assistance to its member countries on the effective appraisal, management and development of fisheries and fishery resources of marine and inland waters and of aquaculture. It develops and disseminates technical and scientific knowledge on these matters. It compiles information at regional and global level, on fisheries, the nature and distribution of fish stocks, their state of exploitation and on impacts affecting their habitats.

More specifically, in support of better management FAO:

- Leads the development international fishery statistical standards, maintenance and updating of standards and procedures for collecting and exchanging statistical data on fisheries and assists countries in the use of improved methods in the national systems.
- Assists FAO Members in improving their capabilities in the collection and processing of fishery data and ensures the availability of quantitative data for analysis and policy formulation for fisheries development and management.
- Promotes the development and application of improved techniques for monitoring and evaluating fishery resources and determining rational exploitation regimes.
- Promotes greater competence and increased self-reliance of FAO Members in fishery data collection, processing and analysis, resource assessment and determination of sustainable exploitation regimes.
- Assists FAO Members, regional bodies and their committees and/or working groups to evaluate the resources under their responsibility and to determine rational exploitation regimes and development policies.
- Promotes increased participation by national scientists and institutions in evaluating resources and determining rational exploitation regimes through the organization of workshops, working groups and training courses.
- Disseminates information on scientific aspects of different resource management strategies to FAO Members, especially to developing countries.

- Promotes the development and application of better methods for monitoring and evaluating effects of environmental changes on fish stocks and related communities.
- Provides policy and planning advice on fishery conservation, management, development, investment and legal frameworks to FAO Members either directly, or through regional bodies.
- Undertakes studies and provides advice to FAO Members, NGOs and the private sector on the social, economic and institutional aspects of fisheries conservation, management and development, with particular reference to the socio-economics of artisanal fisheries development, people's participation in resource management, institutional strengthening, the monitoring, control and surveillance of fisheries, investment project identification, appraisal and implementation, resources allocation and foreign participation in fisheries in exclusive economic zones.

1.2. Institutional capacity and resources.

FAO Fisheries Department has about 25 regular programme professional staff who are involved part time in the work described above. They are based at headquarters and at regional offices. Additional staff are hired as consultants or project staff to assist under the regular programme or to implement field projects. There are currently about 100 operational national, regional or global field projects related to the above-mentioned work which are executed by FAO and funded by a variety of donors, including FAO.

Deleted: 80

The work of the Fisheries Department is governed by the Committee on Fisheries (COFI) which is statutory body of FAO. COFI is also the world's main forum for discussion of fisheries issues. At its 2003 session COFI considered a major agenda item on Strategies for Increasing the Sustainable Contribution of Small-Scale Fisheries to Food Security and Poverty Alleviation which attracted a lot of participation from member countries and INGOs.

1.3. Links and relationships with other organisations and institutions and regional bodies.

Deleted: departments,

FAO Fisheries Department has numerous collaborative activities related to the work described above, including collaboration with other FAO Departments, other UN agencies, regional fishery bodies, development agency partners, INGOs and NGOs, national institutions and the private sector.

The FAO Strategy for Improving Information on Status and Trends of Capture Fisheries (Strategy-STF) is a voluntary instrument that applies to all States and entities and which was adopted by COFI and the FAO Council in 2003. Its overall objective is to provide a framework, strategy and plan for the improvement of knowledge and understanding of fishery status and trends as a basis for fisheries policy-making and management for the conservation and sustainable use of fishery resources within ecosystems. Required actions are specified which fall under nine major areas, with a primary emphasis on the need for capacity building in developing countries.

An important facilitating tool for the Strategy–STF is the Fishery Resources Monitoring System (FIRMS) which is a module within the Fisheries Global Information System (FIGIS) being developed to systematically assemble comprehensive and reliable information on fisheries and fishery resources from the national to the regional and global levels. FIRMS will be operated under a Partnership Arrangement which is expected to come into effect in early 2004 upon signature of the Arrangement by the first five FIRMS Partners and FAO as Secretariat. The initial FIRMS Partners are expected to be CCAMLR, ICES, SPC, the European Commission, IOTC, IATTC and ICCAT. FIRMS will comprise a comprehensive inventory of fisheries and information on the status and trends of numerous marine and inland fishery resources.

The Coordinating Working Party on Fishery Statistics (CWP) is an inter-agency mechanism for coordinating programmes on fishery statistics of inter-governmental organizations and developing definitions, classifications, standards and procedures for the collection and processing of fishery statistics. Many of the outputs of the CWP are contained in the [CWP Handbook of Fishery Statistical Standards](#). CWP currently has 13 member agencies including 10 regional fishery bodies. FAO provides the CWP Secretariat.

[FAO often works through the regional fishery bodies \(RFBs\), both those which are constituted under FAO and those which are independent. It is worth making a distinction between RFBs that manage/provide management advice \(such as the tuna bodies\) versus the commissions that are more about identifying and dealing with issues. The type of information that each can collect or that each requires are quite different - APFIC for example would need regional information on a wide range of fisheries issues and possibly social and environmental type factors that would be useful to members in developing fisheries policy etc., whereas a management body would be much more focussed on issues relating to stocks, fishing effort, capacity and illegal fishing activities.](#)

2. Data and information requirements to meet roles and responsibilities or mandates.

FAO's fishery statistics are utilized for the purposes of a) describing the contribution of fish to national food consumption and food security, b) the contribution of fisheries to the national economy and society and c) facilitating analyses and comparisons of the fishery sectors among different countries and regions and with other sectors. As pointed out in 1.1 above, fishery statistics [published by FAO](#) are not used for fisheries management purposes and so are not of direct relevance to this project, [although the data at national level from which FAO statistics are derived are often used for management purposes.](#)

Deleted: FAO

FAO Fisheries Department prepares reviews of the state of world fisheries and aquaculture and reviews of the state of world marine and inland fishery resources. Information used to prepare these reviews is obtained from a wide range of sources including regional fishery bodies, national institutions, published literature, unpublished reports, projects and case studies, meetings, national institutions, etc. The Fisheries Department is developing FIGIS with the aim of assembling as much information as possible in a systematic way to serve a major information resource to be made available publicly and to be used for preparing other

information products such as fishery reviews, status and trends reports, the fisheries atlas and fisheries section of the UN Atlas of the Ocean. The FIRMS module of FIGIS, the information content of which is being developed in collaboration with FIRMS Partner institutions as described in 1.3 above, will provide information from national and regional sources which will be used by FAO in the preparation of global reviews of status and trends in fishery resources.

Specifically in the inland scenario, the information concerning status and composition of stocks, fishing effort and capacity become quite secondary to the larger issues of dependence upon the resource, the threats to the environmental integrity of the resource, changes in flooding, drainage.. the sociological and demographic trends that influence who fishes where etc.

FAO's information needs in this respect relate to the identification of the role of the fishery in the context of the national economies (who is dependent, what is their status, poverty related issues) - an important aspect is the communication of this information to other sectors that make decisions that impact inland fisheries -particularly water management and control and agricultural development. This was a strong call that came from LARS2 - the need for meaningful information that could be incorporated into the decision making processes of the water development/management sector. It is the lack of effective communication to this sector that leaves inland fisheries wide open to environmental impacts.

Gross tonnages/production and the averaged out consumption figures are less important since these do not accurately reflect how a sub-group of the population may be highly dependent upon inland fisheries as part of a coping strategy or as an integral part of the rural livelihood. Total value also gives little indication of the local importance of the inland fishery.

3. Data and Information Sharing and Exchange Facilitation programmes and activities.

To facilitate the provision and exchange of information amongst FIRMS Partners, protocols based on XML standards have been developed and some training of regional fishery body staff in the use of the protocols has been undertaken. Similarly an XML format for exchanging fishery statistics (FISatXML) and feeding FIGIS has been developed and is proving successful. It has also been used in conjunction with templates based on XSL technology to prepare Fishery Statistical Yearbook tables. In addition, FISatXML has been tested for use with agricultural commodity statistics and appears to be readily adaptable. It is likely to provide the basis for a corporate format with FAO and indeed is one candidate for the exchange of agricultural statistics amongst UN and other agencies. FISatXML is likely to be used also by regional fishery bodies for updating their statistics in a FAO-developed dissemination software called FishStat.

Deleted: XML

Deleted: for exchange and,

Deleted: ,

Deleted: It

Deleted: also

Deleted: and i

Deleted: be

Deleted: a

4. Technical advice on sampling strategies and data collection methodology.

4.1. Resource Requirements

Regular programme resources to provide this technical assistance for fishery statistics development are woefully inadequate. There is only one near full time staff member assisted occasionally by consultants. Nevertheless numerous projects have been undertaken led and backstopped, guidelines and handbook prepared and generic but

highly flexible software called ARTFISH developed for catch, value and effort data collection through stratified sample surveys.

For 2004 and 2005 additional funds have been obtained to conduct two regional workshops on fishery statistics collection and processing. In addition, funds have been made available by donors (Japan, US and Norway) for two components of a project in support of implementation of the Strategy–STF which will run from 2004 until at least 2008. One component is concerned with studies of existing data collection methodologies and the development of new methodologies. The second component will address field testing and capacity building in many countries.

4.2. Review of studies on the relative accuracy, precision, reliability and resource requirements of different data collection strategies/tools (eg CAS – [gear-based or FEU] vs fish consumption surveys).

FAO (1999) and FAO (2002) (See full references and brief description in the Guidance Notes)

A new publication is currently in press:

Stamatopoulos, C. 2003. Safety in Sampling – Methodological Notes. FAO Fisheries Technical Paper No. 454.

A paper has been commissioned by FAO on the following topic and will be considered by an inter-sessional meeting of the CWP agencies in February 2004 after which it will probably be published in revised form:

Fisheries Data Quality Indicators – review of progress and further approaches to addressing data quality and cost-effectiveness.

5. Results and Recommendations of Relevant Studies and Programmes

A key aspect of FAO's mandate is to provide a forum for the exchange and discussion of ideas and information. Results and recommendations from these fora provide valuable advice to FAO and Members.

FAO in collaboration with the Mekong River Commission, and the Thai Department of Fisheries convened an expert consultation on New Approaches for the Improvement of Inland Capture Fishery Statistics in the Mekong Basin (RAP/FAO/MRC 2003). The following section summarizes the relevant conclusions from that consultation.

Range of information requirements

The types of information needed for fishery co-management will depend on the intended uses, i.e. objectives, of that information. Relevant to international advisory and management bodies, the consultation identified the following priority objectives for collecting information on inland fisheries:

- to obtain status and trend information on the fisheries and the environment for the formulation and assessment of management interventions concerning the fishery;
- to ensure proper valuation of the fishery;
- to justify the requests for appropriate allocation of funding and other resources to the sector; and

Comment [F1]: The previous order of these bullets reflected what I thought was a rough prioritization, a logical sequence of how information would be collected and then is reflected in the order of the following sub-headings. I suggest we go back to the original order.

- to fulfil international obligations.

The fishery may have value for economic development, for social and cultural development, or for conservation purposes.

Available manpower, resources and capacity

There are two general means to obtain information to manage fisheries:

- direct measurements such as through frame surveys, catch assessment surveys, census at landing sites, creel census, counting number of fishers, gears, boats, etc., and
- indirect measurements such as yield per type of habitat, GIS and remote sensing, and through post harvest surveys such as consumption, financial, trade and household surveys.

In many areas of the Mekong Basin, as well as in many parts of the developing world, there is insufficient human and financial resources to gather information by these direct measures. Furthermore, direct measurement has not been adequate to represent the entire diversity of inland fisheries in the Mekong Basin (or probably elsewhere) and is best used for large-scale, well-managed fisheries. For many of the indirect strategies, participatory approaches that involve the stakeholders will be necessary to promote cooperation, information sharing and compliance with fishery management regulations. In many areas, fishery management officers are not well paid, and have little real authority and low status in the eyes of fishers. Therefore, motivation, as well as capacity, may be lacking which leads to poor performance of duties.

Structure and operations of co-managed fisheries

Inland fisheries in the Mekong Basin are both formal and informal and include large and small-scale operations. The expert consultation reaffirmed that the inland capture fishery sector in the Mekong Basin is characterized by a diversity of gears used, diversity of operating scales from subsistence to highly commercialized fishing, extensive geographic coverage, lack of centralized landing sites, seasonality of fishing, and diversity of species captured. Thus, the structure of the fisheries is complex and therefore difficult to summarize in general terms. Co-management may be possible for some sectors of the fishery at certain times of the year, and may be difficult for others.

Data collection tools, sources and methods

The consultation was convened because existing data collection procedures in the basin were inadequate and have led to a vast underestimation of the productivity and value of inland fisheries. Traditional catch and effort surveys in the Basin work to a certain extent on the Tonle Sap, where fishing lots are auctioned off and owners of the lots pay licensing fees. However, deliberate misreporting to avoid fees may influence accuracy of some information from this sector.

Alternative approaches, often involving community members and fishers, were identified to include:

- agricultural surveys
- consumption studies and household surveys
- market surveys - Related to market studies, intermediate buyers and sellers of fishery products also provide an entry point to access information on a fishery
- geo-referenced information
- habitat classification and measurement
- co-management or fishery user groups - The *in situ* management structure of some habitats/fisheries can provide the means to collect information. Fishing companies have been created in China that manage lake and reservoir fisheries and provide data

to government resource officers. Lake Victoria in East Africa provides an example of a co-management system that has improved the quality of information on a lake fishery. Such co-management and fishing associations promote cooperation between community and government regulators and provide a good means for communities to collect and collate information. Family logbooks can be incorporated into fishery co-management.

The consultation further noted the important role that women and children have in both harvesting and preparing fish, and as valuable sources of information.

At the international level, it is important to be flexible enough to allow for a diversity of methods to provide the best information under local conditions, but the information provided must be comparable across countries and regions.

Data storage and processing methods and Opportunities for sharing

Countries in the Mekong Basin as Members of FAO and the MRC, have obligations to report fishery production, value and consumption statistics to both organizations. Although progress is being made in this regard through international assistance and the creation of information sources such as Mekong Fish (CD ROM), data are still inadequate to manage the fisheries of the entire basin. China and Myanmar are not members of MRC, although sharing of fishery information from these countries has increased recently. On an international level, regional bodies such as MRC, NACA, SEAFDEC, as well as FAO Regional Fishery Bodies and Arrangements greatly facilitate information collection, validation, and dissemination.

General Conclusions

Countries in the Mekong Basin are encouraged to submit data on inland fishery catches by species, numbers of fishers and fishing fleet data to FAO and to provide any additional available information on fish consumption. However, the primary reason for countries collecting fishery data is to help in the development of national fishery management and wetland policy. It is apparent that much of the information reported to FAO is actually not being used for these purposes. The objectives for collecting information on inland fisheries need to be specified and conveyed to users along with the benefits of having accurate information.

Deleted: yield, species, effort and consumption

Deleted:

Deleted: and that the reason for collecting information on inland fisheries is not well known by national fishery resource officers, fishers, or the local communities that rely on inland fisheries

Deleted: s

The fisheries within the Mekong Basin, as well as many other inland ecosystems, are extremely diverse and composed of both formal and informal fishery sectors that must be treated differently. Methodologies that work in one area may be inappropriate for other sections of the basin. A certain amount of standardization of terminology, approaches and methods will be essential for basin-wide planning and information exchange, especially for international agencies that will disseminate results and information on a global level. However, it is recognized that the diversity of situations in the basin will require a diversity of approaches.

There are data collection systems in place. Significant progress can be made by working with information that is already available in project reports, government offices, and from NGOs and IGOs. Modification of existing mechanisms to make them more flexible, to ensure they do not bias results in regards to inland fisheries, such the agriculture census, or to ensure that they access all available information, such as including women and children in surveys, can be expected to greatly improve the quality of information needed for fishery management.

Inland fisheries do not exist in isolation of other sectors and there are many other users of inland water resources. Inland waters are most strongly impacted by events occurring outside the inland fishery sector. Therefore, it will be crucial for policy makers and managers of the inland fishery sector to form partnerships with stakeholders in other sectors. Multi-sector international agencies such as FAO and MRC, that include more than just fisheries, can play a role in facilitating communication between fisheries and other uses of inland water ecosystems and in establishing management and policies that protect inland water resources and the livelihoods of people that depend on them.

References

RAP/FAO/MRC. 2003. New Approaches for the Improvement of Inland Capture Fishery Statistics in the Mekong Basin. Report of an Ad Hoc Expert Consultation, Udon Thani, Thailand, 2 – 5 September, 2003. Regional Office for Asia and the Pacific, Food and Agriculture Organization, and the Mekong River Commission. Erawan Press, Bangkok, Thailand. [RAP publication number 2003/01. ISBN 92-5-104902-5.](#)